

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent of: Stephen Barbour  
U.S. Patent No.: 11,574,372 Attorney Docket No.: 54598-0001PS2  
Issue Date: February 7, 2023  
Appl. Serial No.: 16/484,728  
Filing Date: January 6, 2020  
Title: BLOCKCHAIN MINE AT OIL OR GAS FACILITY

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**PETITION FOR POST-GRANT REVIEW OF UNITED STATES PATENT  
NO. 11,574,372 PURSUANT TO 37 C.F.R. §42.200 *et seq.***

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**LIST OF EXHIBITS**

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| EX1001 | U.S. Patent No. 11,574,372 to Stephen Barbour et al. (“the ‘372 Patent”)                |
| EX1002 | Excerpts from the Prosecution History of the ‘372 Patent (“the Prosecution History”)    |
| EX1003 | [RESERVED]                                                                              |
| EX1004 | [RESERVED]                                                                              |
| EX1005 | [RESERVED]                                                                              |
| EX1006 | CryptoKube brochure from the WaybackMachine dated March 5, 2016 (“CryptoKube Brochure”) |
| EX1007 | [RESERVED]                                                                              |
| EX1008 | [RESERVED]                                                                              |
| EX1009 | Szmigielski, Albert. Bitcoin Essentials. Packt Publishing Ltd, 2016 (“Szmigielski”)     |
| EX1010 | U.S. Patent Publication No. 2016/0125040 (“Kheterpal”)                                  |
| EX1011 | [RESERVED]                                                                              |
| EX1012 | [RESERVED]                                                                              |
| EX1013 | [RESERVED]                                                                              |
| EX1014 | US Patent Publication No. 2015/0368566 (“Young”)                                        |
| EX1015 | [RESERVED]                                                                              |
| EX1016 | [RESERVED]                                                                              |
| EX1017 | U.S. Patent Publication No. 2014/0096837 (“Belady-837”)                                 |

- EX1018 U.S. Patent Publication No. 2018/0109541 (“Gleifchauf”)
- EX1019 [RESERVED]
- EX1020 [RESERVED]
- EX1021 [RESERVED]
- EX1022 “Crypto you can mine from a home computer in 2023,” Brave New Coin (bravenewcoin.com) (July 18, 2023)
- EX1023 [RESERVED]
- EX1024 Second Declaration of Vernon Kasdorf
- EX1025 O’Dwyer, Karl J., and David Malone. "Bitcoin mining and its energy footprint." ISSC 2014, (2014): 280-285 ("O’Dwyer”)
- EX1026 Kaplan, Steven. (2004). Wiley Electrical and Electronics Engineering Dictionary.
- EX1027 The IEEE Standard Dictionary of Electrical and Electronics Terms (6th ed) (1996). IEEE.
- EX1028-1099 [RESERVED]
- EX1100 Complaint for Patent Infringement, *Upstream Data Inc. v. Crusoe Energy Systems LLC*, Case No. 1:23-cv-01252 (D. Colo. May 18, 2023)
- EX1101 ORDER GRANTING Agreed Motion to Stay Litigation and Extend Deadlines, *Upstream Data Inc. v. Crusoe Energy Systems LLC*, Case No. 1:23-cv-01252 (D. Colo. May 18, 2023)

## CLAIM LISTING

| Limitation | Claim language                                                                                                                                                                                                                                                                 |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [1pre]     | A system comprising:                                                                                                                                                                                                                                                           |
| [1a]       | a source of combustible gas produced from a facility selected from a group consisting of a hydrocarbon production, storage, or processing facility;                                                                                                                            |
| [1b]       | a generator connected to the source of combustible gas to receive a continuous flow of combustible gas to power the generator; and                                                                                                                                             |
| [1c]       | blockchain mining devices connected to the generator; in which:                                                                                                                                                                                                                |
| [1c_i]     | the blockchain mining devices each have a mining processor and are connected to a network interface;                                                                                                                                                                           |
| [1c_ii]    | the network interface is connected to receive and transmit data through the internet to a network that stores or has access to a blockchain database;                                                                                                                          |
| [1c_iii]   | the mining processors are connected to the network interface and adapted to mine transactions associated with the blockchain database and to communicate with the blockchain database;                                                                                         |
| [1c_iv]    | the network is a peer-to-peer network;                                                                                                                                                                                                                                         |
| [1c_v]     | the blockchain database is a distributed database stored on plural nodes in the peer-to-peer network; and                                                                                                                                                                      |
| [1c_vi]    | the blockchain database stores transactional information for a digital currency.                                                                                                                                                                                               |
| [2.0]      | The system of claim 1 isolated from a sales gas line and an external electrical power grid.                                                                                                                                                                                    |
| [3.0]      | The system of claim 1 in which: the source of combustible gas and the facility comprise a remote well selected from a group consisting of a remote oil or gas well; and the remote well is connected to produce the continuous flow of combustible gas to power the generator. |
| [4.0]      | The system of claim 3 further comprising a combustion engine connected to the source of combustible gas and connected to drive the generator.                                                                                                                                  |
| [7.0]      | The system of claim 1 in which: the facility comprises a unit selected from a group consisting of an oil storage or processing unit; the source of combustible gas comprises the unit, which has a gas outlet connected to supply combustible gas to operate the               |

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | generator; and the unit is connected to receive oil produced from a remote oil well.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| [8.0]  | The system of claim 1 in which the generator and blockchain mining devices are located adjacent to the facility.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| [9.0]  | The system of claim 1 in which the facility comprises a plurality of remote wells selected from a group consisting of remote oil or gas wells, and one or both of the following conditions are satisfied: the plurality of remote wells are located on a multi-well pad; or the plurality of remote wells include a satellite well.                                                                                                                                                                                                                                                                                                       |
| [10.0] | The system of claim 1 in which the system is configured to modulate a power load level exerted by the blockchain mining devices on the generator, by increasing or decreasing the mining activity of the mining processor.                                                                                                                                                                                                                                                                                                                                                                                                                |
| [11.0] | The system of claim 10 in which the system is configured to modulate the power load level by selecting one or more actions from a group of actions consisting of increasing or decreasing a maximum number of mining processors that are engaged in mining transactions.                                                                                                                                                                                                                                                                                                                                                                  |
| [12.0] | The system of claim 10 in which the system is configured to modulate the power load level in response to variations in a production rate of combustible gas from the hydrocarbon production well, storage, or processing facility.                                                                                                                                                                                                                                                                                                                                                                                                        |
| [15.0] | The system of claim 10 in which: a production rate of combustible gas from the hydrocarbon production well, storage, or processing facility varies between a daily minimum production rate and a daily maximum production rate; the controller is set to limit the power load level to above a power level producible by the generator when the production rate is at the daily minimum production rate; and a backup source, selected from a group consisting of fuel or electricity, is connected make up a shortfall in fuel or electricity, respectively, required to supply the blockchain mining devices with the power load level. |
| [16.0] | The system of claim 1 in which a controller is connected to operate a cooling system to maintain the blockchain mining devices within a predetermined operating range of temperature.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| [17.0] | The system of claim 1 in which the blockchain mining devices are housed in a portable enclosure that is structured to one or more of form a skid or be mounted on a trailer.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [18.0]   | The system of claim 17 in which the portable enclosure comprises a generator driven by an engine, which is connected to the source of combustible gas.                                                                                                                                                                                                                                                                                                                                                                       |
| [19.0]   | The system of any claim 18 in which the engine comprises a turbine.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| [20.0]   | The system of claim 17 in which the portable enclosure comprises an intermodal transport container.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| [21.0]   | The system of claim 17 in which the portable enclosure has the form of a box with walls, a top, and a base, with one or more access doors formed in the walls.                                                                                                                                                                                                                                                                                                                                                               |
| [22.0]   | The system of claim 1 further comprising a combustible gas disposal device, at the facility, the combustible gas disposal device being connected to receive combustible gas from the source of combustible gas.                                                                                                                                                                                                                                                                                                              |
| [23.0]   | The system of claim 22 further comprising a valve connected upstream of the generator to receive the continuous flow of gas from the source of combustible gas, and selectively supply the continuous flow of gas to the generator, the combustible gas disposal device, or both the generator and the combustible gas disposal device, to selectively divert the continuous flow of gas to the combustible gas disposal device, the generator, or both the generator and the combustible gas disposal device, respectively. |
| [24pre]  | A method comprising:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| [24a]    | producing electricity using a generator and a source of combustible gas produced at a facility selected from the group consisting of a hydrocarbon production well, storage, or processing facility, and                                                                                                                                                                                                                                                                                                                     |
| [24b]    | operating blockchain mining devices located at the facility, respectively, using the electricity, in which:                                                                                                                                                                                                                                                                                                                                                                                                                  |
| [24c]    | the generator is connected to the source of combustible gas, in which the facility is connected to produce a continuous flow of combustible gas to power the generator;                                                                                                                                                                                                                                                                                                                                                      |
| [24d_i]  | the blockchain mining devices each have a mining processor and are connected to a network interface;                                                                                                                                                                                                                                                                                                                                                                                                                         |
| [24d_ii] | the network interface is connected to receive and transmit data through the internet to a network that stores or has access to a blockchain database;                                                                                                                                                                                                                                                                                                                                                                        |

|           |                                                                                                                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [24d_iii] | the mining processors are connected to the network interface and adapted to mine transactions associated with the blockchain database and to communicate with the blockchain database;                                                                                                                       |
| [24d_iv]  | the network is a peer-to-peer network;                                                                                                                                                                                                                                                                       |
| [24d_v]   | the blockchain database is a distributed database stored on plural nodes in the peer-to-peer network; and                                                                                                                                                                                                    |
| [24d_vi]  | the blockchain database stores transactional information for a digital currency.                                                                                                                                                                                                                             |
| [25.0]    | The method of claim 24 further comprising, prior to using the source of combustible gas: one or both disconnecting or diverting the source of combustible gas from a combustible gas disposal device at the facility; and connecting the source of combustible gas to operate the blockchain mining devices. |
| [26.0]    | The method of claim 25 in which the combustible gas disposal device comprises one or more of a flare, a vent to the atmosphere, an incinerator, or a burner.                                                                                                                                                 |
| [27.0]    | The method of claim 24 further comprising: connecting the source of combustible gas to operate the blockchain mining devices; and diverting gas from a combustible gas disposal device to operate the blockchain mining devices.                                                                             |
| [28.0]    | The method of claim 24 in which the facility is selected from a group consisting of an oil or gas well that is isolated from a sales gas line and an external electrical power grid.                                                                                                                         |
| [29.0]    | The method of claim 24 in which the source of combustible gas is a remote well selected from a group consisting of a remote oil or gas well.                                                                                                                                                                 |
| [30.0]    | The method of claim 24 in which producing further comprises supplying combustible gas to a combustion engine that is connected to drive the generator.                                                                                                                                                       |
| [34.0]    | The method of claim 29 further comprising operating the blockchain mining devices to: mine transactions with the blockchain mining devices; and communicate wirelessly through the internet to communicate with a blockchain database.                                                                       |
| [35.0]    | The method of claim 34 further comprising modulating a power load level exerted by the blockchain mining devices on the generator, by selecting an action from a group of actions consisting                                                                                                                 |

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | of increasing or decreasing, a mining activity of the blockchain mining devices.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| [36.0] | The method of claim 35 in which: modulating comprises modulating the power load level by increasing or decreasing a maximum number of mining processors that are engaged in mining transactions.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| [37.0] | The method of claim 36 in which modulating comprises modulating the power load level in response to variations in a production rate of combustible gas from the hydrocarbon production well, storage, or processing facility.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| [40.0] | The method of claim 35 in which: a production rate of combustible gas from the hydrocarbon production well, storage, or processing facility varies between a daily minimum production rate and a daily maximum production rate; modulating comprises limiting the power load level to above a power level produced by the generator when the production rate is at the daily minimum production rate; and supplying from a backup source, which is selected from a group consisting of a backup fuel or electricity source a shortfall in fuel or electricity, respectively, required to supply the blockchain mining devices with the power load level. |

Crusoe Energy Systems, LLC (“Petitioner”) petitions for Post-Grant Review (“PGR”) of claims 1-41 (“Challenged Claims”) of U.S. Patent 11,574,372 (“’372 patent”), assigned to Upstream Data Inc. (“Upstream” or “Patent Owner”).

## **I. INTRODUCTION**

The Challenged Claims are directed to systems and methods that include two main components: (1) a generator that runs on a combustible gas, and (2) a plurality of blockchain mining devices connected to the generator. Of course, by Upstream’s earliest possible priority date (February 8, 2017), neither blockchain mining devices nor generators were new.<sup>1</sup> The alleged novelty in Upstream’s so-called “invention” was co-locating the two devices at an oil facility in order to utilize combustible gas produced at the facility (for example, stranded natural gas that—if allowed by regulation—might otherwise be vented into the atmosphere or burned via flaring).

In a previously filed Post Grant Petition (PGR2023-00039), the present Petitioner explained in detail why at least claims 1-4, 7-12, 15-30, 34-37, and 40 of the ‘372 patent are unpatentable as obvious under 35 U.S.C. § 103, and why all 41 claims of the ‘372 patent are unpatentable under 35 U.S.C. § 101 as directed to ineligible subject matter. The present petition explains why all 41 claims of the

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<sup>1</sup> Petitioner does not concede that Patent Owner is entitled to this priority date.

‘372 patent also are unpatentable under 35 U.S.C. §§ 112(a), 112(b), and/or 112(f).<sup>2</sup>

For example, as described below, the claim term “blockchain mining devices” (plural) is indefinite, as it may be construed to refer to either (i) multiple mining servers (e.g., spondooliestech SP35 servers, such as used in CryptoKube’s mobile Bitcoin data center [EX1006, 4]) housed together in a single mobile data center (e.g., in a portable shipping container), or (ii) multiple mobile data centers (e.g., CryptoKube’s mobile Bitcoin data center, which is constructed as a standard shipping container housing various components and electronics [EX1006, 4]), each containing a plurality of mining servers. As such, a person of ordinary skill in the art (“POSITA”) would not have been able to determine the meets and bounds of the claims with reasonable certainty. Further, this term lacks written description support as it was first introduced by attorney during prosecution.

Similarly, the term “mining processor” is indefinite because it is unclear whether the term refers to (1) a chip within a mining server (e.g., an ASIC inside a spondooliestech SP35 server), or (2) the mining server itself.

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<sup>2</sup> These section 112 challenges would have been asserted in the first petition but for the fact that attempting to do so would have surpassed the word count limit by a significant amount.

Further, the term “adapted to mine transactions” is indefinite because it is unclear whether the term requires any specific hardware change to a generic computer, and, if so, what exactly that specific change would be.

Additionally, the term “controller” is used as a black box to perform a number of disparate claimed functions. “Controller” as used in the ‘372 Patent connotes no definite structural meaning to a POSITA but rather is used as means-plus-function term. Consequently, the “controller” term is indefinite because the Patent fails to disclose sufficient structure to perform all the claimed functions.

Crusoe respectfully submits that PGR should be instituted, and that the Challenged Claims should be canceled as unpatentable.

## **II. REQUIREMENTS FOR PGR**

### **A. Grounds for Standing and PGR Eligibility**

Petitioner certifies that the ‘372 Patent is available for PGR. Petitioner is not barred or estopped from requesting review, has not filed a civil action regarding the ‘372 patent, and this Petition is being filed within nine months of the ‘372 patent’s issuance. 37 CFR 42.201-202.

### **B. Challenge and Relief Requested**

Petitioner requests PGR of the Challenged Claims for patent ineligible and obvious, as explained below. Mr. Vernon Kasdorf provides supporting explanations in his declaration cited throughout this petition.

| Ground | Claims           | Invalidity Basis                            |
|--------|------------------|---------------------------------------------|
| 1      | 1-41             | Indefiniteness under 35 U.S.C. §112(b)      |
| 2      | 1-41             | Written description under 35 U.S.C. §112(a) |
| 3      | 10-16, 23, 35-41 | Indefiniteness under 35 U.S.C. §112(f)      |

### C. Level of Ordinary Skill in the Art

A POSITA would have a degree in chemical engineering, petroleum engineering, process engineering, mechanical engineering, or a similar field with 1-2 years of experience in designing power generation systems, Blockchain mining systems, or other comparable hands-on experience. [EX1024, ¶15]. Alternatively, a person having 3-5 years of experience in the Blockchain mining industry would also qualify as a POSITA. *Id.* Additional education could substitute for professional experience, or vice versa. *Id.*

## III. THE ‘372 PATENT

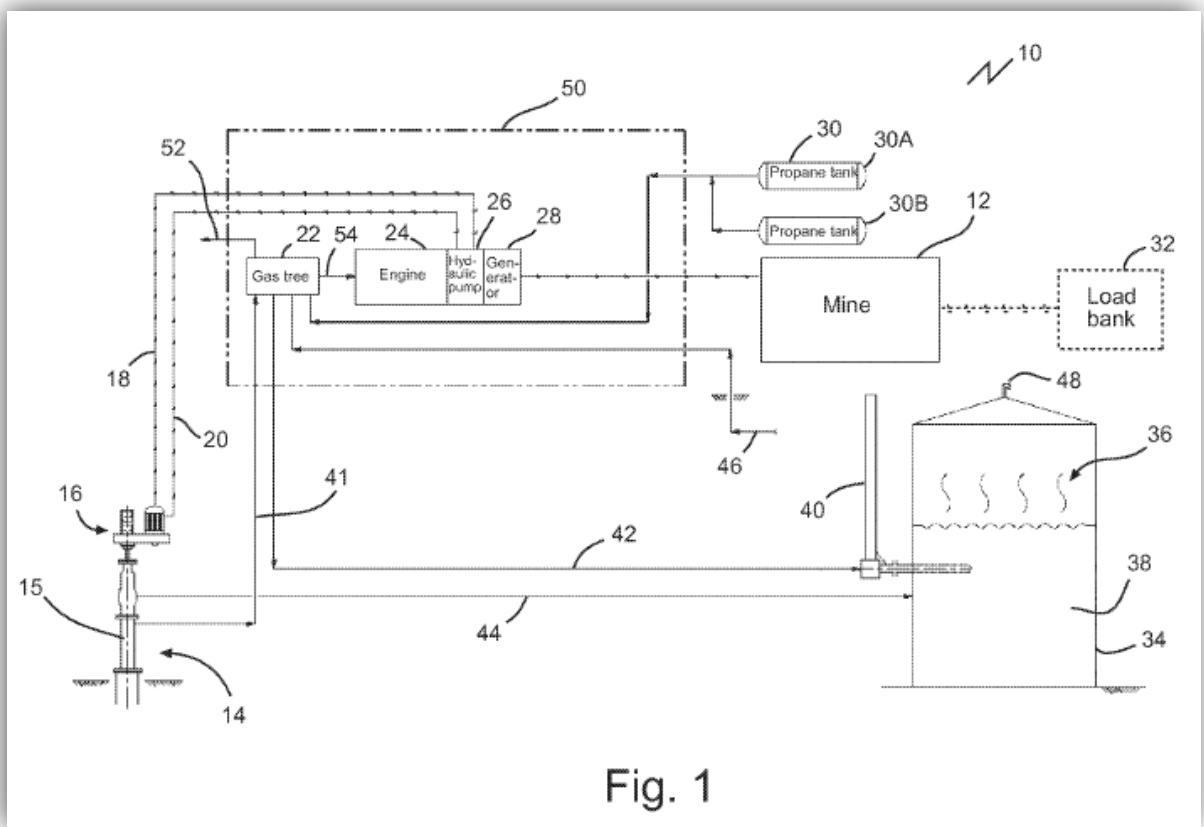
### A. Brief Description of the ‘372 Patent Specification

The ‘372 Patent is directed to “operating a blockchain mining device using natural gas produced at a hydrocarbon production, storage, or processing site/facility.” [EX1001, Abstract]; [EX1024, ¶¶28-34]. By way of background, the ‘372 Patent explains that “[a]t remote oil and gas facilities, excess natural gas is often wasted, for example vented to atmosphere or burned via flaring.” [EX1001,

1:11-13].

Figures 1 and 2 illustrate systems for “powering a blockchain [mining device (12)] at a remote oil well [14],” with a generator (28). [EX1001, 5:53-62; 8:35-48].

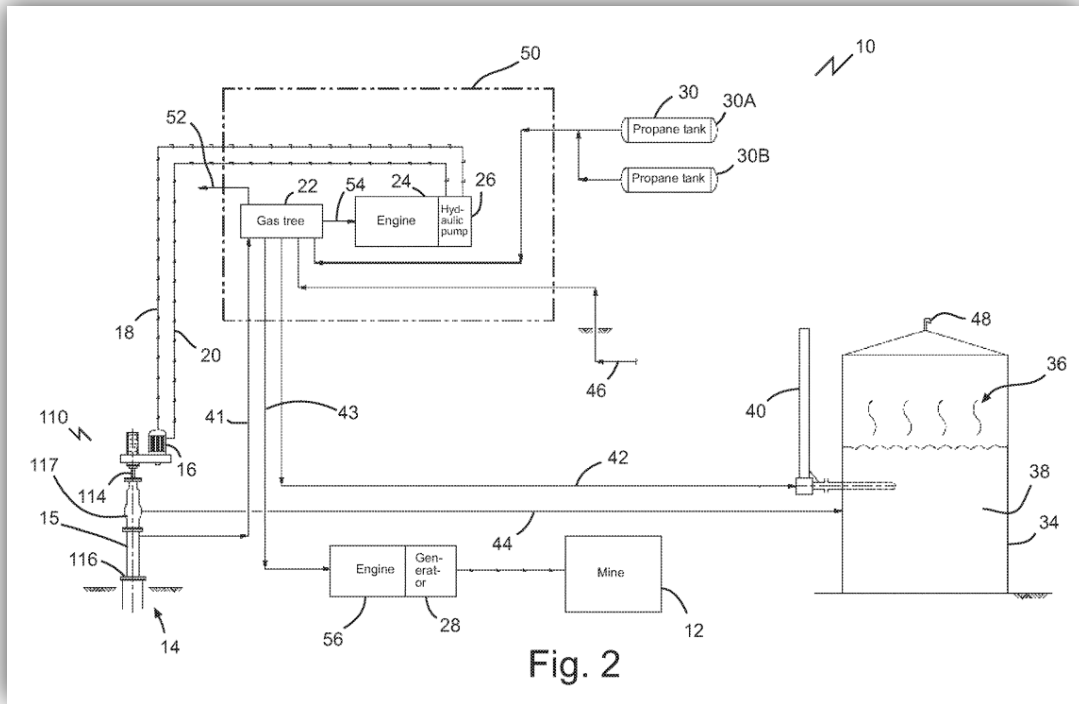
Figure 1 shows “a generator [28] retrofitted to a prime mover [24], which operates a drivehead to pump oil up from the reservoir.” [EX1001, 5:53-56]. That is, the blockchain mining device (12) is connected to a generator (28), which is retrofitted to an engine (24).



[EX1001, FIG. 1]

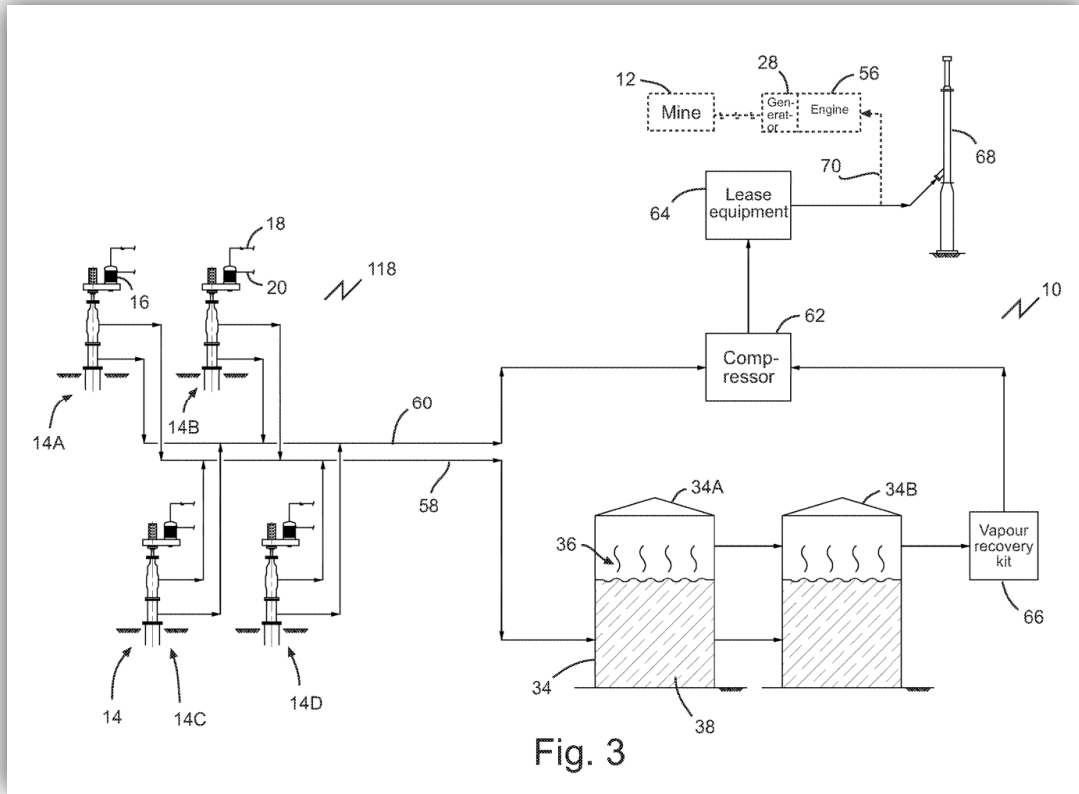
Figure 2 is similar to Figure 1, but this embodiment includes two engines—

one that (with a generator) powers the blockchain mining device, and one that operates the drive head. [EX1001, 5:57-62].



[EX1001, FIG. 2]

In another embodiment, depicted in Figure 3, “a generator and engine are connected to be powered by combustible gas taken off an oil storage unit to power the blockchain main.” [EX1001, 5:63-67].



[EX1001, FIG. 3]

The commonality is that in each case, a blockchain mining device is connected to a generator that runs on combustible gas, namely, natural gas at an oil well or oil storage unit. [EX1024, ¶32].

### **B. Prosecution History of the '372 Patent**

The '372 Patent was filed with 41 claims. [EX1002, 686-691]. Before any office actions had been mailed, a third-party submission cited a prior art Reddit posting. [EX1016; EX1002, 439-447]. According to the submitter, the Reddit posting “discloses a source of combustible gas, a generator that generate[s]

electricity from combustion of the gas, and a blockchain mining device.” [EX1002, 440]. In response, the Office informed Upstream that the Reddit submission “reads adequately on the independent claims,” and suggested that “[m]oving forward, [applicant should] draft[] independent claims that clearly unite the combustible gas production elements and the block chain mining elements.” [EX1002, 348]. Regarding the dependent claims, the Office indicated that “[a]llowable subject matter may reside in dependent claims 12–18,” but that “further searching [would be] required.” [EX1002, 348].

Subsequently, the Office issued an Office Action rejecting the claims as obvious over Belady-837 and Gleifchauf. [EX1002, 336]. The Office took the position that Belady-837 disclosed using a gas generator to power a data center, and Gleifchauf disclosed using servers for blockchain mining and verification. [EX1002, 336-337]. The Office noted that combining the two would have been obvious because Belady-837 discloses that “data centers are being located in areas where natural resources, from which electrical power can be derived, are abundant and can be obtained inexpensively. For example, natural gas is a byproduct of oil drilling operations and is often considered a waste byproduct since it cannot be economically captured and brought to the market.” [EX1002, 336-337 (quoting EX1017, [0004])].

To overcome the obviousness rejection, Upstream amended the claims to

their present form, and argued that its system uses “flare gas” as opposed to “sales gas.” [EX1002, 222-223]. Upstream also argued that blockchain mining is different from traditional data-processing because it requires more energy. [EX1002, 222-223]. Upstream argued that its “discovery amounts to a new use for previously known individual components (a common precursor for patentability), and may provide numerous benefits including the reduction of greenhouse gas emissions and capture of revenue where gas disposal is otherwise a capital loss (for example paragraphs 33, 34, 48, and 73). [EX1002, 223].

This Office Action also included an indefiniteness rejection against claim 24 for being written as a “use” claim. [EX1002, 334]. In response, claim 24 was amended to recite active steps delimiting how this use is supposedly practiced. [EX1002, 220].

This Office Action also included an indefiniteness rejection against claims 1, 3, 7, 9, 13, 14, 18, 20, 21, 24-29, 35, and 40 for improperly using the term “or.” [EX1002, 334]. In response, as suggested by the Office, claim 1 was amended to conform to the Markush form. [EX1002, 221].

On August 31, 2022, a notice of allowance was mailed. [EX1002, 4-9]. In the “Reasons for Allowance,” the Office indicated that:

The assertions and arguments provided by the Applicant credibly declare and make clear that the independent claims and the limitations

contained therein are allowable either in part or taken as a whole over the prior art of record. None of the art of record, taken individually or combination, disclose at least the method step or system components contained within the independent claims.... Moreover, even though the individual references applied in the prior art may teach each individual limitation sufficiently, there does not appear to be sufficient grounds for combining or modifying the prior art of record to adequately arrive at the claimed invention.

The '372 patent issued shortly after a Rule 312 amendment (amending claims 15, 16, 18, 31, 37, 38, 40 to recite “hydrocarbon production well, storage, or processing facility”). [EX1002, 20-29].

#### **IV. THE CHALLENGED CLAIMS ARE UNPATENTABLE UNDER 35 U.S.C § 112(a), 112(b) AND/OR 112(f)**

##### **A. GROUND 1 (indefiniteness under 35 U.S.C § 112(b))**

##### **1. Legal Framework**

The Patent Act requires that a claim “particularly poin[t] out and distinctly clai[m] the subject matter which the inventor . . . regards as his invention.” 35 U.S.C. §112(b). The Supreme Court has read section 112 “to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). The Federal Circuit further clarified that a claim is indefinite under section 112 if the claim

language “might mean several different things and no informed and confident choice is available among the contending definitions[.]” *Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014); *see also Ex Parte Miyazaki*, 89 U.S.P.Q.2d 1207, 1211, 1221 (BPIA 2008) (“if a claim is amenable to two or more plausible claim constructions,” it is ambiguous and thus indefinite); *Bayer CropScience LP v. Exosect Ltd.*, PGR2017-00018, Paper 9 at 16 (P.T.A.B. Oct. 11, 2017) (instituting on a 35 U.S.C. §112(b) challenge because the scope of the claim was uncertain due to two possible meanings of the term “adheres more firmly”).

## **2. “blockchain mining devices”**

In an earlier petition against the ‘372 patent, Petitioner proposed to construe the term “blockchain mining device” as “any computing device that is capable of performing blockchain mining without regard to processor speed or power.” That proposed definition was not an admission that the term “blockchain mining device” was not indefinite. *MeadWestVaco Corp. v. Rexam Beauty & Closures, Inc.*, 731 F.3d 1258, 1270 (Fed. Cir. 2013) (“We also note that the district court seems to have relied heavily on the proposition that the claims ‘are amenable to construction because the parties have already stipulated to their meaning.’ This is not an accurate statement of our law on indefiniteness.”). Rather, “[e]ven if a claim term’s definition can be reduced to words, the claim is still indefinite if a person of ordinary skill in the art cannot translate the definition into meaningfully precise

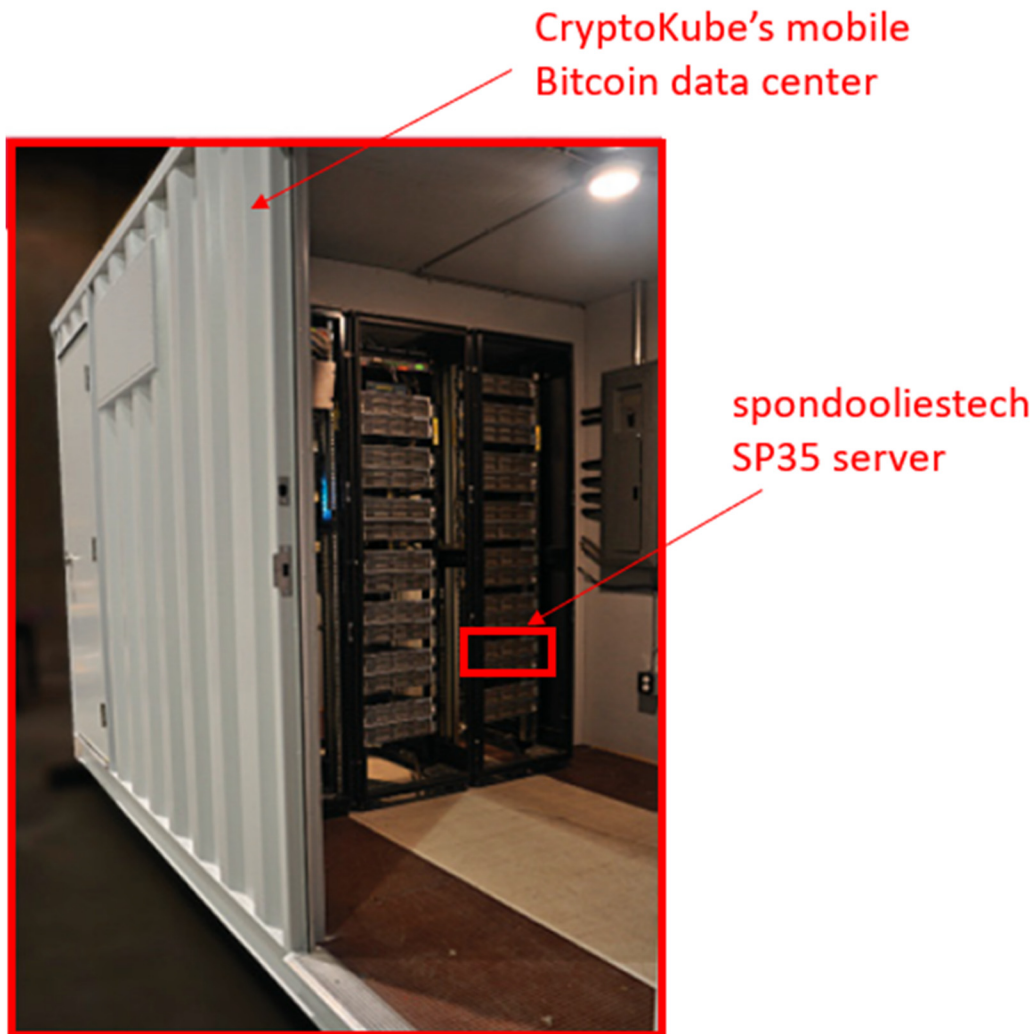
claim scope.” *Haliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1251 (Fed. Cir. 2008). As discussed below, the plural form of the term “blockchain mining devices,” appearing in the ‘372 patent claims is indefinite for several reasons.

First, element [1c] recites “blockchain mining devices connected to the generator.” Similarly, element [24b] recites “operating blockchain mining devices located at the facility.” These elements are indefinite because multiple different interpretations of the term “blockchain mining devices” are possible, rendering it indefinite. Specifically, the term “blockchain mining devices” could refer to either (1) a plurality of mining servers (e.g., spondooliestech SP35 servers) housed together (e.g., in a portable shipping container), or (2) a plurality of mobile data centers (i.e., a plurality of shipping containers, each configured as a mobile data center such as CryptoKube’s mobile Bitcoin data center) each containing a plurality of mining servers housed together. [EX1024, ¶49]; [EX1006, 2]; *Cap. Sec. Sys., Inc. v. NCR Corp.*, 725 F. App’x 952, 959 (Fed. Cir. 2018) (“Indeed, we find no rationale supporting the seemingly arbitrary definition of “transactional operator” as a microprocessor and keyboard, while excluding the associated display and keypads.”). In *Cap. Sec. Sys.*, the patentee argued that the specification described an “embodiment of a transactional operator.” The passage relied on by the patentee described a microcomputer 21 that “responds to keystrokes on the user

keyboard 18” and “signals from other inputs devices.” That passage also explained that the microcomputer 21 “drives the output display 20 in response to the software it is executing and the various signals it receives from the input devices.” The Federal Circuit found, however, that “[i]t is unclear from this passage, however, whether the computer or ‘transactional operator’ includes the microcomputer 21, the keyboard 18 and the display 20, or a subset thereof.” *Id.*, 958. Similarly in our case, while the specification of the ‘372 patent describes an embodiment of a blockchain mining device, it is unclear whether the blockchain mining device includes the mining server (e.g., spondooliestech SP35 servers), the controller, the cooling system, the intermodal transport container, or a subset thereof.

As shown below in EX1006, the grey metal enclosure is a standard shipping container that has been modified to serve as a portable mobile data center housing various components and electronics, including a plurality of mining servers.

[EX1024, ¶50].



[EX1006, 2 (annotated)].

Consistent with the first construction (a plurality of mining servers housed together), claim 17 requires that “the blockchain mining devices *are housed* in a portable enclosure that is structured to one or more of form a skid or be mounted on a trailer.”<sup>3</sup> [EX1001, claim 17; EX1024, ¶51]. Thus, this dependent claim

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<sup>3</sup> All emphases added unless otherwise noted

supports the construction that the term “blockchain mining devices” refers to a plurality of mining servers housed together. *TVnGO Ltd. (BVI) v. LG Elecs. Inc.*, 861 F. App’x 453, 459-460 (Fed. Cir. 2021) (“The[] dependent claims are intrinsic evidence”). Similarly, dependent claim 16 requires “a controller is connected to operate **a cooling system** to maintain the blockchain mining devices within a predetermined operating range of temperature.” [EX1001, claim 16]. A POSITA would have understood that for the plurality of blockchain mining devices to share the same cooling system, the term “blockchain mining devices” should mean the plurality of mining servers are housed together, for example, in a modular shipping container. [EX1024, ¶51]. Thus, both dependent claims 16 and 17 require the first construction (a plurality of mining servers housed together).

Other claims of the ‘372 patent (e.g., claims 8, 10, 15, 24, 25, 27, 34, 35, 40) use the term “blockchain mining devices” in a more ambiguous manner and may be interpreted to support either construction. [EX1024, ¶52]. For example, the reference to “blockchain mining devices” in claim 8 is arguably less clear than other instances of the term because a POSITA would not have understood with reasonable clarity whether claim 8’s reference to “blockchain mining devices [being] located adjacent to the facility” means that (1) a plurality of mining servers are located adjacent to the facility, or (2) a plurality of mobile data centers are located adjacent to the facility.

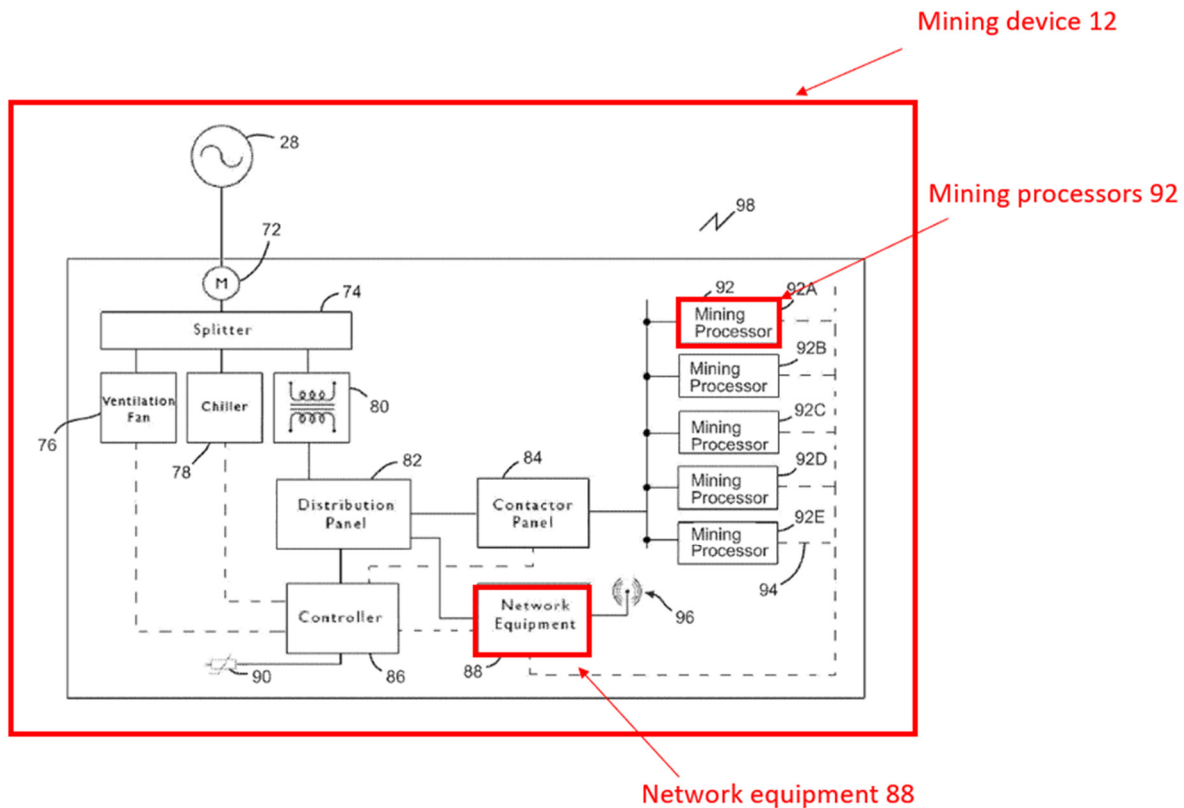
However, both the specification and prosecution history demand the second construction (a plurality of mobile data centers, each containing a plurality of mining servers). [EX1024, ¶53]. First, consistent with the second construction, the specification teaches that “[t]he blockchain mining device **comprises an intermodal transport container.**” [EX1001, 3:51-52; EX1024, ¶53]. Thus, according to the specification, the plurality of “blockchain mining devices” refers to multiple mobile data centers, each containing a plurality of mining servers.

Further, as shown in FIG. 4 below, the specification teaches that each “blockchain mining device 12 may have a network interface, such as network equipment 88, and *one or a plurality of mining processors* 92 (92A-92E for example).” [EX1001, 15:21-25]. Further, the specification teaches that “[e]ach mining processor 92 may be positioned on racks or shelving units,” suggesting that “mining processor 92,”<sup>4</sup> as opposed to blockchain mining device 12, refers to the mining server (e.g., spondooliestech SP35 server). [EX1001, 17:21-22; EX1024,

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<sup>4</sup> As discussed in Section IV.A.3 below, to make things worse, the term “mining processor” is also indefinite because it is not clear whether it refers to (1) a mining server (e.g., a spondooliestech SP35 server) containing a plurality of application-specific integrated circuits (ASICs)), or (2) a chip within the mining server (e.g., an ASIC inside of a spondooliestech SP35 server).

¶54]. As annotated below, FIG. 4 illustrate a “blockchain mining device 12,” which contains a plurality of mining processors 92, and network equipment 88. [EX1024, ¶54].



[EX1001, FIG. 4 (annotated)].

Further, consistent with the second construction (a plurality of mobile data centers), the specification teaches “[t]he blockchain mining device may be replaced by a suitable mining device or **data center**.” [EX1001, 4:55-56; EX1024, ¶55].

Thus, the specification teaches that the term “blockchain mining device” is interchangeable with the term “data center.” Thus, a POSITA would have understood that the claim limitation “blockchain mining devices” requires a

plurality of mobile data centers, each of which contains multiple mining servers housed together. [EX1024, ¶55]. Other parts of the specification use the term in a more ambiguous manner and may be interpreted to support either construction. [EX1024, ¶55]. For example, the specification states “the generator 28 and **blockchain mining device** 12 may be positioned at a suitable location relative to the hydrocarbon well, storage site, or processing facility, such as remote oil well 14.” [EX1001, 9:14-17].

Further, during prosecution, to overcome prior art rejections, claims 1 and 24 were amended to recite a plurality of “blockchain mining devices” (plural) as opposed to “**a** blockchain mining device” (singular). [EX1002, 210 and 213]. In the remarks accompanying the amendment, Upstream argued that “Belady teaches **a** [singular] gas-powered data center.” [EX1002, 223]. Upstream explained that independent claims 1 and 24 were amended to “clarify that there are **plural** blockchain mining devices.” [EX1002, 218]. Thus, Upstream relied on the requirement of multiple “blockchain mining devices” to distinguish over prior art containing a single data center, thereby indicating that the term requires a plurality of data centers. *Infinity Computer Prod., Inc. v. Oki Data Americas, Inc.*, 987 F.3d 1053, 1059 (Fed. Cir.), *cert. denied*, 142 S. Ct. 585, 211 L. Ed. 2d 364 (2021) (“Indefiniteness may result from inconsistent prosecution history statements where the claim language and specification on their own leave an uncertainty that, if

unresolved, would produce indefiniteness.”); [EX1024, ¶56].

Thus, while the dependent claims support the first construction (plurality of mining servers housed together within a single data center), both the specification and the prosecution history support the second construction (multiple data centers, each housing a plurality of mining servers). [EX1024, ¶57]. Given the resulting ambiguity, a POSITA would have had no guidance on what constitutes a plurality of “blockchain mining devices.” *Id.* A claim, although clear on its face, may be indefinite when a conflict or inconsistency between the claimed subject matter and the specification disclosure renders the scope of the claim uncertain, as is the case here, where the ‘372 patent specification disclosure says one thing and the claims say something else. *In re Cohn*, 438 F.2d 989, 993 (CCPA 1971) (affirming indefiniteness in view of inconsistency between the specification and the claims). In *Cohn*, the term “opaque finish” was used inconsistently in the specification and the claims. As used and defined in the specification, and unmodified by other terminology, an “opaque finish” is a flat-appearing finish that is not obtained when an alkali metal silicate is used as a sealant. *Id.* Indeed, the latter sealant is said to produce a glazed or porcelain-like finish having a white coloring. *Id.* The claims, on the other hand, specifically call for sealing the oxide surface with an alkali

silicate in order to ultimately obtain an “opaque appearance.”<sup>5</sup> *Id.* Since “[n]o claim may be read apart from and independent of the supporting disclosure on which it is based,” the *Cohn* court found “an inexplicable inconsistency within each claim requiring that the rejection under 35 U.S.C. 112 on grounds of indefiniteness be sustained.” *Id.*

Similar to *Cohn*, while the claims of the ‘372 patent apparently require the first construction (a plurality of mining servers housed together in a single data center), both the specification and the prosecution history demand the second construction (a plurality of mobile data centers, each housing a plurality of mining servers)—the inconsistency between the claims and the specification results in an unreasonable degree of uncertainty when attempting to understand what the claims require. *Id.*

As such, the specification does not provide sufficient guidance about the

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<sup>5</sup> Claim 12 is illustrative of the particular method claimed: “12. The method of producing on a surface of aluminum a durable **opaque finish** comprising the steps of providing on the surface of the aluminum a porous oxide coating, then sealing said coating by treatment with a solution of an **alkali silicate**, and then treating the sealed surface with a corroding solution until the metallic appearance of the surface is supplanted by an opaque appearance.”

meaning of the claimed system comprising multiple blockchain mining devices to give notice to the public of the boundaries between infringing and innocent activity. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 909 (2014) (“a patent must be precise enough to afford clear notice of what is claimed, thereby ‘appris[ing] the public of what is still open to them.’”); [EX1024, ¶58]. The Challenged Claims are indefinite under §112(b) because a POSITA would not understand what is claimed by “blockchain mining devices” in each of independent claims 1 and 24, and, through their dependence thereon, each of dependent claims 2-23 and 25-41. [EX1024, ¶58].

### **3. “mining processor”**

To further confuse the reader, a related claim term, “mining processor,” is also indefinite. [EX1024, ¶59]. Both claims 1 and 24 require that “the blockchain mining devices each have [*sic*] a mining processor.” But for essentially the same reasons that “blockchain mining devices” is indefinite, it is equally unclear whether the term “mining processor” refers to (1) a mining server (e.g., a spondooliestech SP35 server) containing a plurality of application-specific integrated circuits (ASICs)), or (2) an individual chip within the mining server (e.g., an ASIC inside of a spondooliestech SP35 server). [EX1024, ¶59].

As discussed above, claim 17 requires that “the blockchain mining devices are housed in a portable enclosure that is structured to one or more of form a skid

or be mounted on a trailer,” suggesting that the term “blockchain mining devices” refers to mining servers (e.g., spondooliestech SP35 servers). [EX1024, ¶60]. If the term “blockchain mining devices” refers to the mining servers, then the term “mining processor” cannot also mean mining servers. *Id.* By inference, the term “mining processor” should refer to a chip inside the mining server. *Id.* However, the specification teaches the opposite:

The components of **an ASIC mining processor** include the hash boards (each board has numerous chips that is [sic] doing the hashing), a controller (to communicate with the network and optimize the mining processors chip frequency and fans for cooling), and a power supply (typically converts AC input power to DC power for the ASIC). Each **mining processor** 92 may be positioned on racks or shelving units.

[EX1001, 17:15-22]. A POSITA would have understood the foregoing passage as meaning that the mining processor 92 was not a chip (or a circuit or a hash board) contained within a mining server, but rather was a device of sufficient size and form that it could be “positioned on racks or shelving units,” which suggests that the mining processor 92 was a standalone object. [EX1024, ¶60]. Thus, the specification requires the term “mining processor” to mean a mining server. *Id.*

Further, claim 10 requires “increasing or decreasing the mining activity of the **mining processor**.” Under the second construction of “mining processor” (an

individual chip within the mining server), it is not clear how the mining activity of a chip can be adjusted. In fact, a POSITA would not know how to adjust the mining activity of a single ASIC within a mining server. [EX1024, ¶61].

To make matters worse, the specification teaches that “[t]he **mining processor** comprises a plurality of **mining processors**,” without any attempt to explain the difference, if any, between a “mining processor” and the multiple “mining processors” of which it is comprised. [EX1001, 3:16-17; EX1001, 17:55-56 (“The mining processor 92 may comprise a plurality of processors....”); EX1002, 545 (original claim 13)].<sup>6</sup> Without such an explanation, a POSITA would have essentially no idea what was meant by “a mining processor” or how it could comprise a plurality of itself – i.e., “a plurality of mining processors.” [EX1024, ¶62]. Consequently, these specification disclosures result in an unreasonable degree of uncertainty as to the meaning of the claim term “mining processor.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014).

As such, the Challenged Claims are indefinite under §112(b) because a POSITA would not have understood what is meant by “mining processor” in each

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<sup>6</sup> Original claim 13 also recites “the mining processor comprises a plurality of mining processors.” Likely realizing how confusing this is, Patent Owner removed this language from claim 13 in the July 4, 2022 amendment.

of independent claims 1 and 24, and, through their dependence thereon, each of dependent claims 2-23 and 25-41. [EX1024, ¶63].

#### 4. “adapted to mine transactions”

Independent claims 1 and 24 both recite that “the mining processors are connected to the network interface and **adapted to mine transactions** associated with the blockchain database.” [EX1001, claims 1 and 24]. However, the claim term “adapted to mine transactions” is also indefinite. *Animal Care Sys., Inc. v. Hydropac/Lab Prod., Inc.*, No. 13-CV-00143-MSK-BNB, 2015 WL 535566, \*9-\*11 (D. Colo. 2015) (finding claim phrase “designed and configured” in the claim limitation “the system comprising a bag forming apparatus designed and configured for placement at a clean side of a laboratory washroom” to be indefinite). In *Animal Care Sys.*, the Court noted that “neither the claims nor the specifications of the ‘721 Patent describe any particular indicia that would demonstrate that a given bag-forming machine was ‘designed and configured for placement’ in a particular location.” *Id.*, at 10. Similarly here, the specification of the ‘372 Patent does not describe any particular indicia that would demonstrate that a particular computing device was “adapted to mine transactions.” *Id.* The specification mentions the term “adapted” twice, without any explanation of its meaning. [EX1001, 3:6-9 and 15:30-33]. Consequently, a POSITA would have no idea which adaptations were needed to make a functioning system, much less

which adaptations would result in an infringing system and which would not.

[EX1024, ¶64]. As such, there is insufficient notice of the boundaries between infringing and innocent systems. *CUPP Cybersecurity, LLC v. Trend Micro, Inc.*, No. 3:18-CV-1251-M, 2021 WL 5865393, at \*7 (N.D. Tex. Dec. 10, 2021).

During prosecution, Upstream amended claim 1 to add the term “adapted to mine transactions” [EX1002, 210 and 213] and argued that “[b]lockchain mining is not synonymous with regular data center processing and cannot be compared as such.” [EX1002, 222]. Thus, Upstream relied on the term “adapted to mine transactions” to distinguish over “regular data center processing” prior art, but did not define anywhere in the specification the bounds of the term “adapted to mine transactions.” [EX1024, ¶65]. It is unclear when exactly infringement would occur, because it is unclear whether the term “adapted to mine transactions” requires any specific hardware change to a generic computer, and exactly what the specific changes would be. *Id.*

It was well-known that any generic computer with a CPU can mine digital currency or other blockchain-related transactions.<sup>7</sup> [EX1009, 40 (“CPU mining”);

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<sup>7</sup> It is noteworthy that the ‘372 patent claims do not require the mining devices to mine Bitcoin. Consequently, the claims encompass mining transactions (e.g.,

EX1025, Table 1 (listing various mining devices); EX1024, ¶66]. For example, the website Brave New Coin reports that, although Bitcoin-brand digital currency can no longer be profitably mined with a standard PC, there still exists other brands of “[c]rypto you can mine from a home computer in 2023.” [EX1022, 1]. In the MAGS system described in EX1014, various generic computers (e.g., laptop 1804 and desktop PC 1806) are connected to control various aspect of the system. [EX1014, FIGS. 14 and 18, [0260]-[0263], and [0273]; EX1024, ¶66]. By reciting “adapted to mine transactions,” a POSITA would not have known whether such generic computers would infringe or additional hardware changes are required, and thus would not have been able to determine the scope of this term with reasonable certainty. [EX1024, ¶66].

Thus, the Challenged Claims are indefinite under §112(b) because a POSITA would not understand what is claimed by “adapted to mine transactions” in each of independent claims 1 and 24, and, through their dependence thereon, each of dependent claims 2-23 and 25-41. [EX1024, ¶67].

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adding valid blocks) associated with any blockchain, including mining digital currencies other than Bitcoin.

**B. GROUND 2 (written description under 35 U.S.C § 112(a))**

**1. Legal Framework**

The Patent Act requires that the “specification shall contain a written description of the invention.” 35 U.S.C. §112(a). The test for written description under Section 112(a) “is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010). “[T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art,” and “the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed.” *Id.*

**2. “blockchain mining devices”**

As discussed above, during prosecution, to overcome prior art rejection, independent claims 1 and 24 were amended to recite a plurality of “blockchain mining devices” as opposed to “a blockchain mining device” [EX1002, 210 and 213 ]. In the remarks of the office action response, Upstream argued that “Belady teaches a [singular] gas-powered data center.” [EX1002, 223]. Upstream explained that independent claims 1 and 24 were amended to “clarify that there are plural blockchain mining devices, as supported by the application as filed, for example,

original claim 13.” [EX1002, 218].

However, contrary to Patent Owner’s representation, original claim 13 does not contain the term “blockchain mining devices.” [EX1024, ¶70]. Instead, original claim 13 recites “[t]he system of claim 12 in which: the **mining processor** comprises a plurality of mining processors; and the controller is connected to modulate the maximum power load level by increasing or decreasing a maximum number of mining processors that are engaged in mining transactions.” [EX1002, 545]. In fact, the term “blockchain mining devices” appears nowhere in the specification as filed.<sup>8</sup> [EX1024, ¶70]. Nor does the specification explain how multiple “blockchain mining devices” can be connected to the same system, or how to modulate the power load level of multiple “blockchain mining devices.” *Id.*

Thus, a POSITA would have concluded that the inventor never envisioned and did not have possession of a system containing a plurality of blockchain mining devices, as of the filing date of the ‘372 patent. [EX1024, ¶71]. Indeed, the singular form of the term “blockchain mining device” appears in the specification

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<sup>8</sup> The Abstract recites “portable mining devices.” This is a different term, and, in any case, the addition of the term “portable” supports the construction that the term “blockchain mining devices” refers to mobile data centers (which are described as being “portable” [EX1001, 2:25-42]), as opposed to mining servers.

45 times—not once does the specification use the plural form “blockchain mining devices.” *Id.* As such, the term “blockchain mining devices” was first introduced by attorney during prosecution, and lacks written description support from the specification and the original claims as filed.

Thus, independent claims 1 and 24 are invalid for lacking the required written description for this limitation, and dependent claims 2-23 and 25-41 inherit the same insufficiency and are invalid for the same reasons. [EX1024, ¶72].

**C. GROUND 3 (indefiniteness under 35 U.S.C. § 112(f))**

Claims 10-16,<sup>9</sup> 23, and 41 recite the following limitations, all of which relate to various functions (at least some of which are *emphasized*) performed by “the controller.” Because a POSITA would have regarded “controller” as used in the Patent as a black box that does not connote any specific structure for performing

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<sup>9</sup> Claim 35 recites a functional limitation identical to that of Claim 10. Claim 36 recites a functional limitation identical to that of Claim 11. Claim 37 recites a functional limitation identical to that of Claim 12. Claim 38 recites a functional limitation identical to that of Claim 13. Claim 39 recites a functional limitation identical to that of Claim 14. Claim 40 recites a functional limitation identical to that of Claim 15.

the recited functions, each limitation is properly understood to be a means-plus-function limitation under 35 U.S.C. § 112 (f).

- “[T]he system is configured *to modulate a power load level* exerted by the blockchain mining devices on the generator, *by increasing or decreasing the mining activity of the mining processor.*” [EX1001, claim 10].
- “[T]he system is configured *to modulate the power load level* by selecting one or more actions from a group of actions consisting of *increasing or decreasing a maximum number of mining processors that are engaged in mining transactions.*” [EX1001, claim 11].
- “[T]he system is configured *to modulate the power load level in response to variations in a production rate of combustible gas* from the hydrocarbon production well, storage, or processing facility.” [EX1001, claim 12].
- “[T]he controller is set *to limit the power load level* to at or below a power level producible by the generator when the production rate is at the daily minimum production rate.” [EX1001, claim 13].
- “[T]he controller is set *to divert to a load bank excess electricity* produced by the generator.” [EX1001, claim 14].
- “[T]he controller is set *to limit the power load level* to above a power level producible by the generator when the production rate is at the daily minimum production rate;” [EX1001, claim 15].
- “[A] controller is connected *to operate a cooling system* to maintain the blockchain mining devices within a predetermined operating range of temperature.” [EX1001, claim 16].
- “The system of claim 22 further comprising a valve connected upstream of the generator to receive the continuous flow of gas from the source of combustible gas, and selectively *supply the continuous flow of gas* to the generator, the combustible gas disposal device, or

both the generator and the combustible gas disposal device, *to selectively divert the continuous flow of gas* to the combustible gas disposal device, the generator, or both the generator and the combustible gas disposal device, respectively.” [EX1001, claim 23].

- “[T]he power load level is limited to above a power level produced by the generator when the production rate is at the daily maximum production rate.” [EX1001, claim 41].

**1. The “controller” term is a means-plus-function term and subject to § 112(f)**

“Controller” as recited in the claims of the ’372 Patent is a means-plus-function term under 35 U.S.C. § 112(f). For claim terms that do not use the word “means” a rebuttable presumption exists that the term is not means-plus-function.

*Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348-49 (Fed. Cir. 2015).

However, “[i]n making the assessment of whether the limitation in question is a means-plus-function term . . . the essential inquiry is . . . whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.” *Id.* at 1348. The presumption that § 112(f) does not apply for claim terms lacking the word “means” is overcome if it is demonstrated that the claim term fails to “recite sufficiently definite structure” or recite “function without reciting sufficient structure for performing that function.” *Id.* at 1349 (internal quotation marks omitted).

A patentee is required to disclose sufficiently definite structure for performing a function to avoid purely functional claiming otherwise “all possible

means of achieving a function” would be claimed. *Cox Commc'ns, Inc. v. Sprint Commc'n Co. LP*, 838 F.3d 1224, 1232 n. 4 (Fed. Cir. 2016) (internal quotation marks omitted). When assessing the claim term, it is not done in isolation but also in view of the functions it is claimed to perform. *MTD Prod. Inc. v. Iancu*, 933 F.3d 1336, 1342 (Fed. Cir. 2019). Further, *it is not enough* for a single preferred embodiment disclosed in the specification to provide structure that is otherwise absent. *Id.* at 1342-43. When the claim term serves as a “black box” for performing the claimed functions and is not given any structural significance by the specification, the presumption against the application of § 112(f) is rebutted. *Williamson*, 792 F.3d at 1350-51.

Here, a POSITA would not have understood “controller” to have a sufficiently definite structural meaning as used in the claims. [EX1024, ¶¶75-76]. “Controller,” by itself, can connote multiple structural meanings to a POSITA that are not necessarily congruent or a class of structures. [EX1024, ¶75]. In the context of the '372 Patent, “controller” could potentially have many meanings as the invention spans a variety of technical arts, and the “controller” is claimed to potentially perform both electrical and mechanical functions. [EX1024, ¶75; *see also infra* (listing the associated functions with a the “controller)]. In fact, some definitions of “controller” use the term to mean a black box for performing any controlling function. [EX1026, 3 (defining controller as “a **signal, circuit, device,**

**or system** which controls any given mechanism, function, process, or piece of equipment”)]; [EX1027, 4 (defining controller as “[a] **device** that regulates the state of a system”, or “[a] **functional unit** in a computer system that controls one or more units of the peripheral equipment”)]. Likewise, “controller” is used as a black box in the context of the patent and lacks further definition. “Controller” could just as easily be substituted with “system,” “device,” or “control module,” without altering the meaning or scope of the claim terms. The black-box recitation of “controller” is the only element disclosed to perform a variety of functions just as if “means” had been used. *See Williamson*, 792 F.3d at 1350; *see also Intex Recreation Corp. v. Team Worldwide Corp.*, PGR2019-00015, Paper 41, at 36-49 (PTAB. Apr. 29, 2020) (finding that “pressure control assembly” functioned as a black box and was subject to § 112(f)); *cf. Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361, 1363-64 (Fed. Cir. 2012) (finding that “control device” provides no additional structural to the term “control means”).

The claims either expressly or impliedly recite that the “controller” is the means to perform the following functions:<sup>10</sup>

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<sup>10</sup> Even the claims that lack the specific use of “controller” invoke “controller” as the identified structure for performing the functions. *See Dionex Softron GmbH v.*

1. “modulate a power load level exerted by the blockchain mining devices on the generator, by increasing or decreasing the mining activity of the mining processor” Cl. 10;
2. “modulate the power load level by selecting one or more actions from a group of actions consisting of increasing or decreasing a maximum number of mining processors that are engaged in mining transactions” Cl. 11;
3. “modulate the power load level in response to variations in a production rate of combustible gas” Cl. 12;
4. “limit the power load level to at or below a power level producible by the generator when the production rate is at the daily minimum production rate” Cl. 13;

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*Agilent Techs., Inc.*, 811 F. App’x 630 (Fed. Cir. 2020) (interpreting functional limitations lacking the disputed claim term as performed by the disputed claim term because the claimed functions were substantially similar). Also, when read in light of the specification, only “controller” or “another suitable device” is described as the means for performing all of the claimed functions. [EX1001, 3:13-16, 3:18-20, 3:23-25, 3:29-34, 3:43-46, 4:22-25, 17:25-29, 17:47-55, 17:56-18:15, 18:21-27, 18:40-43, 18:55-61].

5. “divert to a load bank excess electricity produced by the generator”  
Cl. 14;
6. “limit the power load level to above a power level producible by the  
generator” Cl. 15;
7. “operate a cooling system to maintain the blockchain mining devices  
within a predetermined operating range of temperature” Cl. 16;
8. “selectively supply the continuous flow of gas to the generator, the  
combustible gas disposal device, or both the generator and the  
combustible gas disposal device,” Cl. 23.
9. “to selectively divert the continuous flow of gas to the combustible  
gas disposal device, the generator, or both the generator and the  
combustible gas disposal device, respectively” Cl. 23;
10. “modulating a power load level exerted by the blockchain mining  
devices on the generator, by selecting an action from a group of  
actions consisting of increasing or decreasing, a mining activity” Cl.  
35;
11. “modulating the power load level by increasing or decreasing a  
maximum number of mining processors that are engaged in mining  
transactions” Cl. 36;

12. “modulating the power load level in response to variations in a production rate of combustible gas” Cl. 37;
13. “limiting, while the production rate is above the daily minimum production rate, the power load level to at or below a power level producible by the generator” Cl. 38;
14. “diverting to a load bank excess electricity produced” Cl. 39;
15. “limiting the power load level to above a power level produced by the generator when the production rate is at the daily minimum production rate” Cl. 40; and
16. “[limiting] the power load level [] to above a power level produced by the generator when the production rate is at the daily maximum production rate.” Cl. 41.

[EX1001, claims 10-16, 23, 35-41]; [EX1024, ¶¶73-74]. As such, the claims recite “controller” solely in terms of the functions it performs. [EX1024, ¶¶73-74, 76].

Furthermore, the specification fails to define “controller” as either a specific structure or a class of structures and describes its operation only by restating the functions it is claimed to perform. [EX1001, 3:13-16, 3:18-20, 3:23-25, 3:29-34, 3:43-46, 4:22-25, 17:25-29, 17:47-55, 17:56-18:15, 18:21-27, 18:40-43, 18:55-61]; [EX1024, ¶¶75-76]. Moreover, in one instance, the specification contradictorily teaches that the claimed “controller” is responsible for modulating the mining

activity of the mining processor, but it is technically performed by a different control structure within the mining processor itself. *Compare* [EX1001, 17:51-55, 18:6-7] *with* [EX1001, 17:9-21]; [EX1024, ¶75]. This contradiction is confusing and is understood by a POSITA that the Patentee did not know or intend to connote and specific definite structure. [EX1024, ¶75].

**2. “Controller” lacks sufficient disclosed structure in the ’372 Patent and, therefore, is indefinite.**

Because the claim term “controller” is subject to § 112(f), the specification must disclose sufficient structure that performs all claimed functions, otherwise the term is indefinite. *Williamson*, 792 F.3d at 1351-52; *Media Rts. Techs., Inc. v. Cap. One Fin. Corp.*, 800 F.3d 1366, 1369-70, 1372 (Fed. Cir. 2015) (construing a claim term to include functions recited in multiple claims associated with the claim term). The claimed functions that are performed by the “controller” are recited above, and are summarized as follows: (i) modulating the power consumption of the blockchain mining device by regulating the number of active mining processors in response to the production rate of combustible gas; (ii) modulating the power consumption of the blockchain mining device by regulating the mining activity of the mining processors in response to the production rate of combustible gas; (iii) diverting excess power production to a load bank; (iv) cooling the mining devices;

and (v) selectively supplying gas to the generator or a gas disposal device.

[EX1001, claims 10-16, 23, 35-41]; [EX1024, ¶¶73-74].

Any corresponding structure must not only be disclosed in the specification, but it must also be clearly linked to the recited claimed functions. *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed. Cir. 2012). It is not enough to disclose some structure, the specification must disclose adequate structure to perform all of the claimed functions. *Id.* at 1318-19. When a means-plus-function limitation is computer implemented, the *required* structure is an algorithm. *Williamson*, 792 F.3d at 1352 (citing *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1367 (Fed.Cir.2008)). An algorithm can be expressed “in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure.” *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed.Cir.2008). When algorithms are not disclosed to perform *all claimed* functions of such terms, the term is indefinite. *Noah*, 675 F.3d at 1318-19.

**i. Modulating power consumption by selecting the number of active mining processors in response to combustible gas production (Claims 11, 36)**

For the functions recited in Claims 11, 36, and relatedly in 12, 13, 15, 37, 38, 40, and 41, the specification lacks sufficient structure to perform the function

of “modulating the power load level by . . . increasing or decreasing a maximum number of mining processors that are engaged in mining transactions.” The corresponding elements associated with the “controller” are a network connection, thermistor, cooling system, and contactor panel. [EX1001, Fig. 4, 16:67-17:9, 17:23-25, 17:47-60, 18:1-2; EX1024, ¶79]. Considering the network connection and ability to be remotely accessed, the controller is implemented as a special purpose computer programmed to perform the particular claimed functions in some embodiments.<sup>11</sup> [EX1001, Fig. 4, 17:1-3; EX1024, ¶79]. The specification fails to disclose sufficient structure not only because it lacks disclosure of the necessary components for performing the recited functions, but also because it lacks disclosure of algorithms that can be executed by appropriate structures to perform the recited functions. *See Williamson*, 792 F.3d at 1352.

For example, as shown in FIG. 4 below, the ‘372 patent teaches only that the “controller” is part of the block chain mining device 12 within the enclosure 98. [EX1001, FIG. 4, 16:33-43, 17:23-24]. While the specification discloses that the “controller” 86 can take mining processors on- and off-line via its connection to

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<sup>11</sup> This is also supported by an embodiment that describes the controller as a programmable logic controller, which is a type of general-purpose computer. [EX1001 17:1-2]; [EX1024, ¶79].

the contactor, it fails to disclose any structure or means to do so in response to the production rate of combustible gas, as recited in claim 37. [EX1001, 17:6-9]. The mention of a production rate sensor does not solve this problem either. The specification mentions the sensor in passing and describes no connection or interface with the “controller” nor does it explain whether such a device is a fixture within the system. [EX1001, 18:2]. Furthermore, although the specification states that the “controller 86 may modulate . . . to correspond with . . . readings from a production rate sensor” ([EX1001, 17:2-18:2]), that statement does not disclose specific structure as to how the controller is to receive the readings—they could be manually fed into the controller periodically by a person, or by any other means. [EX1024, ¶79]. Therefore, the specification does not disclose adequate structure to perform the claimed function of modulating power consumption by selecting the

number of active mining processors in response to combustible gas production.

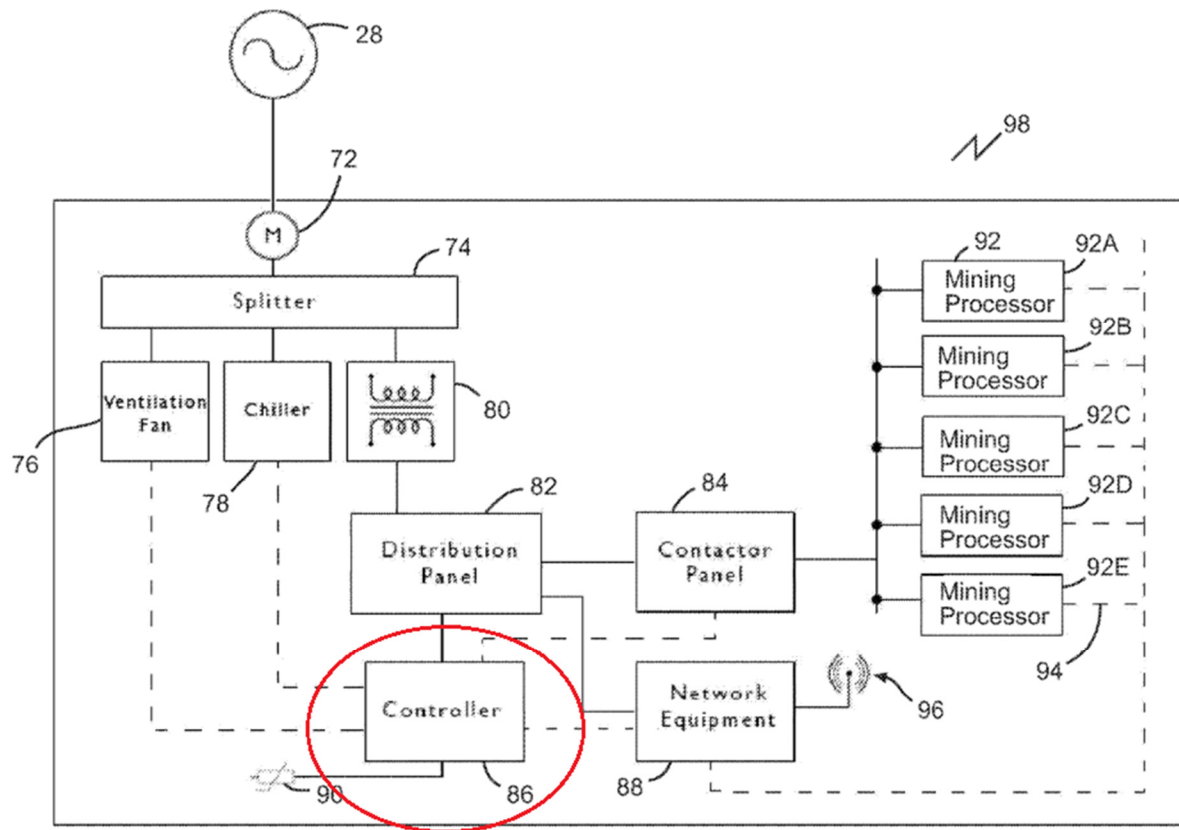


Fig. 4

In addition to failing to adequately disclose the required physical structure, the specification discloses no algorithm for performing the function of increasing or decreasing the number of mining processors using the input from any sensor or other means. [EX1001, 17:2-18:2]; [EX1024, ¶79]. This is required for a computer implemented means-plus-function limitation. *Williamson*, 792 F.3d at 1352. Repeatedly, the specification discloses the desired output of the “controller” in relation to the input. [EX1001, 17:6-9, 17:47-60, 17:61-64]. However, this

relationship between input and output does not constitute an algorithm. *Ibormeith IP, LLC v. Mercedes-Benz USA, LLC*, 732 F.3d 1376,1382-83 (Fed. Cir. 2013) (finding that disclosing inputs and the preferred outputs does not disclose and algorithm for the purpose of § 112(f)). Because the specification does not disclose an algorithm for increasing or decreasing the number of mining processors in response to gas production, the claim term “controller” is indefinite.

**ii. Modulating the power consumption of the blockchain mining device by changing the mining activity of the mining processors in response to the production rate of combustible gas (Claim 12)**

As explained in the previous section, the “controller” means-plus-function limitation is computer implemented and, therefore, requires the disclosure of an algorithm. As before, the specification states only that the “controller” 86 modulates the power level by increasing or decreasing mining activity but does not disclose how it does that in relation to the production of gas. [EX1001, 17:47-60, 17:66-18:1, 18:6-12]. Again, no algorithm is disclosed, which makes the claim term indefinite. [EX1024, ¶¶75-78].

Additionally, the specification fails to disclose the necessary physical (as opposed to algorithmic) structure required for the “controller” 86 to be able to modulate the mining activity of the mining processors. The specification teaches that changes in mining activity of the mining processor is a function of adjusting

the voltage or clock rate (or frequency) of the processor. [EX1001, 13:52-58].

The specification further teaches that the mining processor comprises a *different* controller that is integrated into the processor circuitry (such as an ASIC) which specifically controls processor function like frequency (*i.e.*, clock rate). [EX1001, 17:15-19]. Consequently, the fact that frequency control is performed by a component other than the “controller” 86 suggests that the “controller” 86 is inherently incapable of adjusting the mining activity of the mining processors. [EX1024, ¶75]. Furthermore, the specification does not disclose any interface between the “controller” 86 and the controller in the mining processor or how the “controller” 86 modifies the mining processor activity via its internal controller. [EX1024, ¶75]. Again, the term is indefinite.

**iii. Diverting excess power production to a load bank  
(Claims 14, 39)**

As with the other means-plus-function limitations, the “diverting excess power” limitation is purportedly accomplished by the “controller” 86 in a computer implemented manner. [EX1001, 18:40-43] Therefore, this limitation requires the disclosure of a corresponding algorithm but none is disclosed to explain the diverting function of the “controller.” [EX1024, ¶80]. Additionally, the specification fails to explain how the controller could physically divert excess electrical energy to load bank or what structure is providing the event triggering

input. [EX1024, ¶80]. The only connection to the load bank 32 disclosed in the specification is depicted in FIG 1 (shown below) as being attached to the blockchain mine 12. [EX1001, FIG 1]. Meanwhile, no connections are shown in FIG 4 (shown above) or disclosed in the specification that would explain how the “controller” 86 knows when there is excess power, how much excess power, and how to divert it. [EX1024, ¶80]. For this reason, the term is indefinite.

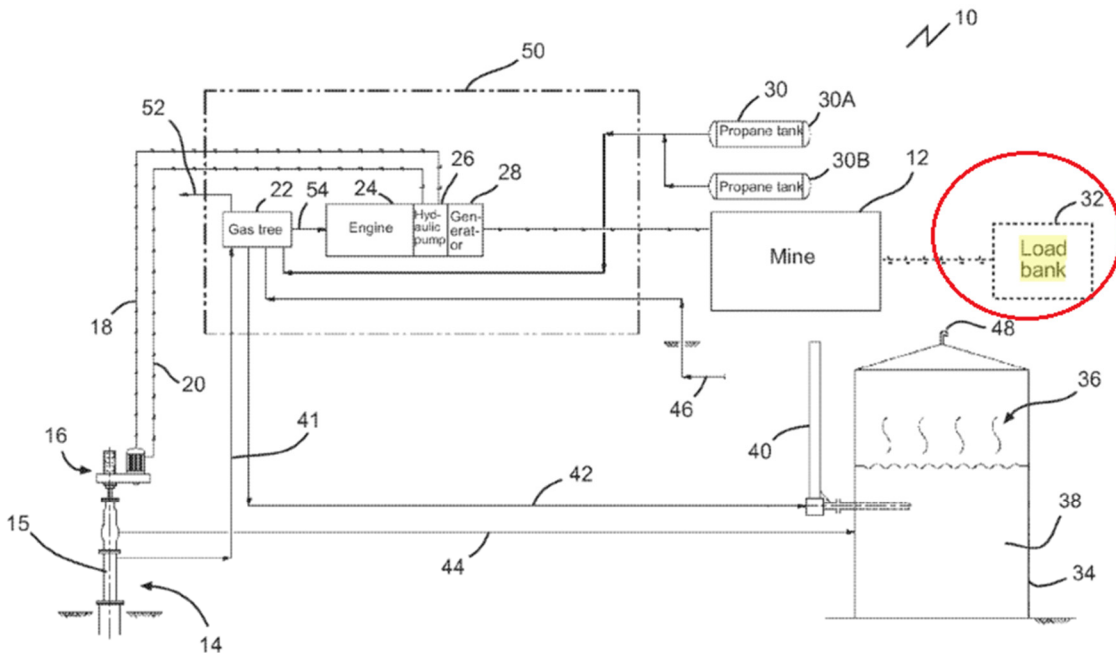


Fig. 1

#### iv. cooling the mining devices (Claim 16)

As in the previous instances, the “controller” means-plus-function limitation is computer implemented and, therefore, requires the disclosure of an algorithm to perform the claimed function of “maintain[ing] the blockchain mining devices within a predetermined operating range of temperature.” [EX1001, claim 16].

Here, the specification arguably discloses both the proper physical structure and an algorithm for performing the claimed function. For example, FIG. 4 arguably shows the necessary structures and interface between the controller, temperature sensor, and cooling equipment. [EX1001, FIG 4]. Specifically, the specification discloses, in prose, the step-by-step process that the “controller” must perform to regulate temperature. [EX1001, 17:23-39]; [EX1024, ¶81]. The fact that the patentee appeared to know how to disclose both physical and algorithmic structure emphasizes the lack of disclosure for all the other means-plus-function limitations.

**v. Selectively supplying gas to the generator or a gas disposal device (Claim 23)**

As in parts i-iii above, the specification fails to disclose an algorithm for performing the claimed function of “selectively supplying gas.” Indeed, the specification is especially scant on disclosure of the physical and algorithmic elements. Claim 23 recites, and the specification discloses, that a valve is required to divert or supply gas to the generator or the gas disposal device. [EX1001, claim 23, 18:40-45]. However, Claim 23 requires that the gas is selectively supplied or diverted, and the specification teaches that the “controller” 86 is responsible for the task. *Id.* Yet, the specification discloses no necessary structure such as a connection between the computer-implemented “controller” and the mechanical valve, or a means of operating the valve, making the term indefinite. *See Dionex*

*Softtron GmbH v. Agilent Techs., Inc.*, 811 F. App'x 630, 631 (Fed. Cir. 2020)

(finding that a computer-implemented “control unit” could not control a valve by itself without more structure).

## **V. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION**

### **A. The *Fintiv* Factors**

Upstream filed its District Court complaint against Crusoe relating to the ‘372 Patent on May 18, 2023. EX1100, 13. The current petition is being filed before an answer to the complaint or any procedural schedule has been entered. In fact, the District Court has stayed the case pending the decision regarding institution of PGR No. 2023-00039. [EX1101.] Thus, there are no present deadlines for *Markman* briefing, contentions, or trial. Given Crusoe’s diligence in filing the present petition before answering the complaint, the *Fintiv* factors, and recent Board decisions applying them, weigh against discretionary denial. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11, 5-6 (P.T.A.B. May 13, 2020).

#### **1. Factor 1: The District Court has stayed the case**

Factor 1 favors Petitioner because the District Court has stayed the case pending the decision regarding institution of PGR No. 2023-00039. [EX1101, 1].

#### **2. Factor 2: The Trial Schedule is Unclear**

The trial date has not yet been scheduled. However, because of Petitioner’s diligence in filing this petition within three months of being served with a

complaint, the Final Written Decision (“FWD”) will likely issue months before the trial date.

**3. Factor 3: Petitioner’s Diligence and Investment in PGR Outweighs the Parties’ Minimal Investment in Litigation**

Petitioner filed this petition at a very early stage of the litigation—a fact that “has weighed against exercising the authority to deny institution under *NHK*.”

*Apple Inc. v. Seven Networks LLC et al.*, IPR2020-00156, Paper 10 at 11-12 (P.T.A.B. June 15, 2020).

**4. Factor 4: The Petition’s Grounds Are Materially Different**

The parallel District Court case has barely begun. Any possible overlap between these two proceedings would be completely speculative. Further, as discussed above, the District Court case has been stayed. As such, this factor supports institution.

**5. Factor 5: Party Overlap**

Petitioner and Upstream are parties to the co-pending litigation meaning that there is complete overlap regarding the parties.

**6. Factor 6: The Merits of this Petition Strongly Favor Institution**

The merits of this Petition are particularly strong. As demonstrated in the Petition with reference to testimony from Mr. Vernon Kasdorf, institution would

result in a finding of unpatentability of the Challenged Claims.

**B. Considerations Implicated by 35 U.S.C. § 325(d)**

To determine whether to institute Crusoe’s Petition, the Board will consider “whether the same or substantially the same” art or arguments were “previously presented to the Office” and, if so, the Board will then also consider whether Petitioner has “demonstrated that the Office erred in a manner material to the patentability of the challenged claims.”<sup>12</sup>

The arguments presented in this petition are not the same or substantially the same as those previously presented to the office. As discussed in Section III.B, during prosecution, the Examiner did not challenge the indefiniteness of any of the terms “blockchain mining devices,” “mining process,” “adapted to mine transactions” and “controller.” Neither did the Examiner challenge written description support for the term “blockchain mining devices.”

**C. Other Considerations Implicated by 35 U.S.C. § 314(a)**

Petitioner previously filed a PGR petition against claims 1-4, 7-12, 15-30, 34-37 and 40 of the ‘372 patent (PGR2023-00039). Filing multiple petitions is permissible at least for the purpose of avoiding issues associated with the word

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<sup>12</sup> *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020).

count. *See* Rules of Practice for Trials Before the Patent Trial and Appeal Board and Judicial Review of Patent Trial and Appeal Board Decisions, 77 Fed. Reg. 48,612, 48,635 (Aug. 14, 2012) (“Where a petitioner can demonstrate how a waiver of the page limit is in the interests of justice, a motion to waive the page limit should be considered. Alternatively, the filing of multiple petitions directed to subsets of related claims should be considered.”); *Corp. v. Inc.*, No. IPR2018-01330, 2019 WL 210807, at \*3 (P.T.A.B. Jan. 15, 2019).

The Consolidated Trial Practice Guide (“CTPG”) states in relevant part:

Parallel Petitions Challenging the Same Patent. Based on the Board’s experience, one petition should be sufficient to challenge the claims of a patent in most situations. Two or more petitions filed against the same patent at or about the same time (e.g., before the first preliminary response by the patent owner) may place a substantial and unnecessary burden on the Board and the patent owner and could raise fairness, timing, and efficiency concerns. *See* 35 U.S.C. § 316(b).

CTPG, 59. Nonetheless, “more than one petition may be necessary, including for example, when the patent owner has asserted a large number of claims in litigation or when there is a dispute about priority date requiring arguments under multiple prior art references.” *Id.*

Upstream has asserted a large number of claims (potentially claims 1-41) of the ‘372 patent against Petitioner in the District Court. *See* EX1100, 9.

Specifically, Upstream used the term “at least claims 1-2,” suggesting that Upstream may assert all claims of the ‘372 patent. *Id.* This petition addresses, among other things, claims that are not challenged in PGR2023-00039 on prior art grounds. In particular, Petitioner did not challenge all 41 claims of the ‘372 patent in PGR2023-00039 on prior art grounds, but instead challenged only claims 1-4, 7-12, 15-30, 34-37, and 40 on that basis. *See* PGR2023-00039, Paper 2. Claims 5, 6, 13, 14, 31-33, 38, 39, and 41 were not challenged in PGR2023-00039. *Id.* This petition addresses these previously unchallenged claims of the ‘372 patent. *Id.* Thus, although the same ‘372 patent is challenged in both petitions, PGR2023-00039 and the present Petition do not challenge the same claims of the ‘372 patent on the same statutory grounds.<sup>13</sup> *See, e.g., Apple Inc. v. Seven Networks, LLC*, IPR2020-00707, Paper 11, at 20 (PTAB Oct. 22, 2020) (granting institution on parallel petitions). Further, this petition addresses issues not involved in PGR2023-00039, including indefiniteness and written description,

As required by the Board, Petition identifies below (1) a ranking of the petitions in the order in which it wishes the Board to consider the merits, if the Board uses its discretion to institute any of the petitions, and (2) a succinct

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<sup>13</sup> Note that, in PGR2023-00039, all 41 claims were challenged based on patent ineligibility under 35 U.S.C. § 101.

explanation of the differences between the petitions, why the issues addressed by the differences are material, and why the Board should exercise its discretion to institute additional petitions if it identifies one petition that satisfies petitioner's burden under 35 U.S.C. § 314(a). CTPG, 60.

**1. a ranking of the petitions**

Although Petitioner believes that PGR2023-00039 and this petition are both meritorious and justified in light of the positions Upstream may take, at this stage, Petitioner requests the Board consider the merits of PGR2023-00039 first.

**2. a succinct explanation of the differences between the petitions**

This petition is based on indefiniteness and written description. By contrast, PGR2023-00039 is based on obviousness and patent ineligible subject matter. A detailed comparison is shown in the below table:

| <b>Pet.</b>      | <b>Ground</b>   | <b>Claims</b>                   | <b>Invalidity Basis</b>   |
|------------------|-----------------|---------------------------------|---------------------------|
| PGR2023-00039    | 1               | 1-4, 8, 16-30, 34               | Obviousness § 103         |
|                  | 2               | 1-4, 8, 10-12, 15-30, 34-37, 40 | Obviousness § 103         |
|                  | 3               | 1-4, 7-12, 15-30, 34-37, 40     | Obviousness § 103         |
|                  | 4               | 1-4, 8, 16-22, 24-30, 34        | Obviousness § 103         |
|                  | 5               | 1-4, 8, 10-12, 15-30, 34-37, 40 | Obviousness § 103         |
|                  | 6 <sup>14</sup> | 1-41                            | Ineligibility § 101       |
| Current petition | 1               | 1-41                            | Indefiniteness § 112      |
|                  | 2               | 1-41                            | Written description § 112 |
|                  | 3               | 10-16, 23, 35-41                | Indefiniteness § 112      |

The Board should consider both petitions and not exercise its discretion to deny institution of either. This petition is not redundant, and the materiality of the differences between the petitions are self-explanatory. The language in Upstream’s District Court complaint creates uncertainty about which claims will be asserted, and this petition is a direct consequence of this uncertainty.

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<sup>14</sup> The petition in PGR2023-00039 in fact includes a full and complete analysis explaining why claims 1-41 of the ‘372 patent are unpatentable as patent ineligible under § 101. Due to an oversight, however, the Grounds table in the PGR2023-00039 petition fails to identify the § 101 ground as a separate, sixth challenge.

## **VI. CONCLUSION**

Petitioner respectfully requests institution of the PGR and requests that the Board ultimately find the Challenged Claims unpatentable.

## **VII. PAYMENT OF FEES**

Petitioner authorizes charge of fees to Deposit Account 06-1050.

## **VIII. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(a)(1)**

### **A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)**

Crusoe Energy Systems, LLC is the real party-in-interest.

### **B. Related Matters Under 37 C.F.R. § 42.8(b)(2)**

The ‘372 Patent is the subject of the following civil action: *Upstream Data Inc. v. Crusoe Energy Systems LLC*, Case No. 1:23-cv-01252 (D. Colo. May 18, 2023).

Petitioner has also filed a PGR petition against claims 1-4, 7-12, 15-30, 34-37 and 40 of the ‘372 patent (PGR2023-00039). Petitioner requests that this petition be assigned to the same panel.

### **C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)**

Petitioner provides the following designation of counsel.

| <b>Lead Counsel</b>                                                                                                                         | <b>Backup counsel</b>                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| John Phillips, Reg. No. 35,322<br>FISH & RICHARDSON P.C.<br>60 South Sixth Street, Suite 3200<br>Minneapolis, MN 55402<br>Tel: 858-678-5070 | Jia Zhu, Limited Rec. No. L1372<br>FISH & RICHARDSON P.C.<br>60 South Sixth Street, Suite 3200<br>Minneapolis, MN 55402<br>Tel: 858-678-5070 |

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|--------------------------------------------------------------------------------------------------|------------------------------------------------|

**D. Service Information**

Please address all correspondence and service to the address listed above.

Petitioner consents to electronic service by email at [PGR54598-0001PS2@fr.com](mailto:PGR54598-0001PS2@fr.com).

Respectfully submitted,

Dated: September 26, 2023

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(Control No.: PGR2023-00052)

Attorneys for Petitioner

**CERTIFICATION UNDER 37 CFR § 42.24**

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for Post Grant Review totals 10,243 words, which is less than the 18,700 allowed under 37 CFR § 42.24.

Dated: September 26, 2023

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**CERTIFICATE OF SERVICE**

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on September 26, 2023, a complete and entire copy of this Petition for Post Grant Review and all supporting exhibits were provided by Federal Express, to the Patent Owner by serving the correspondence address of record as follows:

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